

# **U.S. COLLEGE STUDENT PERCEPTIONS OF ORGANIC FOOD PRODUCTS AND BUYING HABITS**

## **CHAPTER 1 INTRODUCTION**

Over the last twenty years, the American public has become increasingly concerned with the safety and quality of their food, leading them to question conventional agricultural practices. This interest in safety, paired with growing concerns about the environment and sustainability, has led to a large increase in demand for organic food products (Stevens-Garmon, Huang, & Lin, 2007).

As the demand for organic food increases, so does the cropland devoted to organic food production. According to the United States Department of Agriculture (USDA), certified organic cropland doubled between 1992 and 1997; from 650,000 to 1.3 million acres (Dimitri & Greene, 2002). Organic cropland is continually increasing and in 2005 there were 1.7 million acres of organic cropland (0.5 percent of total U.S. cropland) and 2.3 million acres of organic rangeland and pasture (0.5 percent of total U.S. rangeland and pasture). Also in 2005, all 50 States in the U.S. had some certified organic farmland for the first time (Economic Research Service, 2002).

Organic food sales saw a 500 percent increase between 1994 and 1999. In 2000, for the first time ever, more organic food was purchased in conventional supermarkets than any other venue, such as farmers markets and natural food stores. Approximately 7.8 billion dollars was spent on organic food and an estimated 50 percent of that (approximately 3.9 billion dollars) was spent at conventional retail outlets or supermarkets (Dimitri & Greene, 2002). More recently, in 2005, organic food sales totaled 13.8 billion dollars or 2.5 percent of the retail food market according to the Organic Trade Association, (OTA) (OTA, 2006). As organic food becomes more accessible through neighborhood supermarkets and the demand continues to rise, the need to study consumers' perceptions and knowledge becomes increasingly valuable.

Although the increase in demand and cropland conversion was taking place, the standards and policies were not clear to consumers and some are still confused as to what the term “organic” and other labeling terms really mean. This confusion led to the creation of the USDA’s, National Organic Program (NOP) in October 2002 (Klonsky, 2000). The NOP “develops, implements, and administers national production, handling, and labeling standards for organic agricultural products. The NOP also accredits the certifying agents (foreign and domestic) who inspect organic production and handling operations to certify that they meet USDA standards” (Economic Research Service, 2002). This study will examine how much consumers, specifically college students, know about these labeling, handling, and production requirements.

This study is also aimed at determining the reasoning behind the buying decisions and perceptions that college students have towards organic foods. Research has found that the majority of consumers view organically grown food products as “safer” or “less risky” when compared to conventionally grown food (Williams & Hammitt, 2002). For example, in Williams and Hammitt’s study in 2002, approximately 700 organic and conventional food buyers were surveyed on what they thought the risk of death was from pesticide residue on conventionally grown food. Survey respondents estimated that between 50 and 200 people per million die each year from pesticide residue on food. This rate is not far from the annual mortality risk from motor vehicle accidents in the United States (Williams & Hammitt, 2002).

To know the actual fatality rate from pesticide residue consumption requires further studies, but encountering any toxic substance in a low enough concentration will not impair one’s health. For example, oxalic acid, which can be found in rhubarb and spinach is harmless in low concentrations, but can cause kidney damage or possibly death at higher doses. Similarly, caffeine is regularly consumed by many Americans daily and is not deadly in moderate amounts.

However, consuming fifty times the average amount of caffeine is enough kill a human (Levine, 2007). This misconception of the safety risks of conventionally grown food shows that a portion of the population is making their food-buying decisions based on misconceived notions or wrong information.

This study looks to find out the extent of college students' perceptions of organically grown food versus conventionally grown food. Do college students believe organic food to be more nutritious, safer, or better for the environment, etc.? For example, pesticide use has been thought by consumers to be associated with long-term and unknown effects on health (Saba & Messina, 2003). Whether or not this is true is arbitrary because if people believe that pesticides are associated with unknown health effects, that perception alone can influence buying decisions. The study also looks to investigate the relationship between these perceptions and their knowledge of the definitions of such terms as "organic," "all-natural," "pesticide-free," and "cage-free." Finally, this study will look to find how college students' perceptions and knowledge of organic food products influence their buying habits of such products.

The information collected about college students' perceptions and knowledge of organic food will lend valuable information to farmers and ranchers considering switching to organic production and even those who aren't. It is not a secret that organic produce typically costs more, but farmers also receive a premium price. So by determining out what influences college students' buying decisions and by understanding what they know about organic food, farmers and ranchers can better serve their needs. Premium prices listed for organic grains in 2001 include a 59 percent higher price for corn, a 177 percent higher price for soybeans, and a 41 percent higher price for oats (Dimitri & Greene, 2002). The information found in this study can help farmers and ranchers achieve a premium selling price, as well as meet the expanding demand for organic produce, which in turn, keeps consumers satisfied.

Demand for organic produce continues to increase and so does the cropland devoted to its production. By exploring college students' knowledge and perceptions towards organic food, farmers and ranchers will be able to better meet the market's demands. In this study, college students will be used as the sample because they have already been living on their own and have needed to make choices about what food they buy. They are also the next largest demographic that will soon have families and therefore potential, if not already current organic food consumers. This study will also explore the effects of these perceptions and knowledge of organic foods on their buying habits. Understanding what influences college students' food buying decisions, will provide information to farmers and ranchers to communicate more effectively about their products and hopefully keep demands met while helping agriculture to remain a strong, viable industry.

### **Statement of the Problem**

As the American society becomes more and more concerned with the safety, nutritional value, and environmental effects of their food and its production, it is important that we gain an understanding of college students' perceptions and knowledge of organically grown foods. It is also important that we find out *how* college students' perceptions and/or knowledge of "organic" food products influence their buying decisions. This information will potentially help us meet the growing demand for organic foods and help farmers and ranchers to achieve the premium prices that can be available in that segment of the industry.

One study surveyed approximately 700 conventional and organic fresh produce buyers and found that the majority of consumers perceived a relatively high risk to be associated with conventionally grown produce when compared to other public health hazards. Over 90 percent of survey respondents also thought that a way to reduce the pesticide residue risk was to substitute

organic produce for conventionally grown produce (Williams & Hammitt, 2002). This study shows that perceptions matter and, if strong enough, can influence spending habits.

General knowledge of organic produce and labeling requirements can also influence buying decisions among consumers. If consumers are unsure of what the labels actually mean, they may be making decisions that were unintended. For example, the average consumer is likely to view pork labeled as “organic” and “natural” as the same thing. Consumers may also assume that organic or natural, in the case of beef, means no hormones and no antibiotics (Diel & Associates, 2001). In this study, survey respondents will be asked to locate definitions and requirements of terms such as: “organic,” “all-natural,” “natural,” “cage-free,” “free-range,” “pesticide-free,” “antibiotic-free,” “hormone-free,” and “RBST free.”

Finally, this study looks to find the link between college students’ perceptions and their knowledge of organic foods with their buying decisions. Health and safety concerns have been seen to be key factors in influencing consumer preference and sub-sequential buying decisions (Yiridoe, Bonti-Ankomah, & Martin 2005). Some consumers see eating organic foods as an investment in their health. Price is also a determinant in buying decisions because organic food typically calls for a premium price, however, the income elasticity for organic foods has been found to be relatively small (Yiridoe, Bonti-Ankomah, & Martin 2005). This study will look more specifically at college students’ views towards organic food and how their knowledge influences their buying habits. The study will focus on decision-making factors such as price, availability, food-safety concerns, animal welfare concerns, and environmental impact concerns. The sample will be asked to estimate their average budgets over a period of time that is spent on organic foods.

In order for this study to be thorough, differentiations must be made between the various organic food categories. The categories are separated into: fresh produce, non-dairy beverages

(such as juice and soda), breads and grains, packaged foods, and dairy products. It is also essential to acknowledge the top-selling organic categories to be able to draw comparisons from this study's survey results with the most popular categories. The top-selling category is fresh produce, followed by non-dairy beverages, breads and grains, packaged foods, and dairy products (Dimitri & Greene, 2002).

### **Purpose(s) of the Project**

The purpose of this study is to investigate college students' perceptions and knowledge of organic food products through survey method, in order to inform farmers and ranchers of the future market's demands.

This study is also to gather information about buyer preferences that will hopefully help farmers, ranchers, producers and commodity groups communicate more effectively about the definitions of their products' standards and modify (if necessary) their marketing techniques, communication strategies and/or farming and ranching practices to obtain the highest price possible.

### **Objectives of the Project**

- To compile information about college students' perceptions towards organically grown food when compared to conventionally grown food.
- To compile information about college students' knowledge of the definitions of specific organic and natural food terms and the regulations associated with these terms.
- To describe how college students' perceptions and knowledge of organic food influences their buying decisions.
- To put this information together in a useful way to help farmers, ranchers, producers and commodity groups more effectively communicate the definitions of their products standards; and to modify (if necessary) their marketing techniques, communication

strategies and/or farming and ranching practices to obtain the highest price possible for their products.

### **Definition of Important Terms**

#### **Act:**

The Organic Foods Production Act of 1990, as amended (7 U.S.C. 6501 et seq.) (Economic Research Service, 2002).

#### **Certified Operation:**

A crop or livestock production, wild-crop harvesting or handling operation, or portion of such operation that is certified by an accredited certifying agent as utilizing a system of organic production or handling as described by the Act and the regulations in this part (Economic Research Service, 2002).

#### **Conventional (Agriculture):**

An industrialized agricultural system characterized by mechanization, monocultures, and the use of synthetic inputs such as chemical fertilizers and pesticides, with an emphasis on maximizing productivity and profitability (Eicher, 2003).

#### **Free Range or Free Roaming:**

Producers must demonstrate to the USDA that the poultry has been allowed access to the outside (Economic Research Service, 2006).

#### **Natural:**

A product containing no artificial ingredient or added color and is only minimally processed (a process which does not fundamentally alter the raw product) may be labeled natural. The label must explain the use of the term natural (such as - no added colorings or artificial ingredients; minimally processed.) (Economic Research Service, 2006).

#### **No Hormones (pork or poultry):**

*Hormones are not allowed in raising hogs or poultry.* Therefore, the claim "no hormones added" **cannot be used** on the labels of pork or poultry unless it is followed by a statement that says "*Federal regulations prohibit the use of hormones.*" (Economic Research Service, 2006).

#### **No Hormones (beef):**

The term "*no hormones administered*" **may** be approved for use on the label of beef products if sufficient documentation is provided to the USDA by the producer showing no hormones have been used in raising the animals (Economic Research Service, 2006).

#### **No Antibiotics (red meat and poultry):**

The terms "*no antibiotics added*" may be used on labels for meat or poultry products if sufficient documentation is provided by the producer to the Agency demonstrating that the animals were raised without antibiotics (Economic Research Service, 2006).

**Organic:** Defined by the USDA as:

Products labeled as “100 percent organic” must contain (excluding water and salt) only organically produced ingredients and processing aids. Products labeled “organic” must consist of at least 95 percent organically produced ingredients (excluding water and salt). Any remaining product ingredients must consist of nonagricultural substances approved on the National List including specific non-organically produced agricultural products that are not commercially available in organic form. Products meeting the requirements for “100 percent organic” and “organic” may display these terms and the percentage of organic content on their principal display panel. The USDA seal and the seal or mark of involved certifying agents may appear on product packages and in advertisements. Agricultural products labeled “100 percent organic” and “organic” cannot be produced using excluded methods, sewage sludge, or ionizing radiation.

**Organic Production:**

Defined by the USDA, “a production system that is managed in accordance with the Act and regulations in this part to respond to site-specific conditions by integrating cultural, biological, and mechanical practices that foster cycling of resources, promote ecological balance, and conserve biodiversity” (Economic Research Service, 2002).

**Producer:**

A person who engages in the business of growing or producing food, fiber, feed, and other agricultural-based consumer products (Economic Research Service, 2002).

### Summary

In the early 1990s, the organic wave began and has been gaining ground ever since. The American public is becoming more and more concerned with how their food is produced and the effect it is having on the environment. Growing concerns about animal welfare, pesticides, and sustainability have driven the organic industry and have since led to increases in demand and organic cropland acreage. It is important for agriculture, as an industry, to study the college students’ trends and preferences to better predict and meet future demands. It is also beneficial to understand how college students feel about certain foods and what they know about them. As the definitions of some terms may be unclear, it is agriculture’s job to make these differences clear so that the farmers and ranchers can benefit to the fullest extent from these meaningful distinctions. In turn, the survey will discover how knowledge affects college students’ buying decisions. This type of data will allow farmers and ranchers to be able to communicate more



effectively about the different types of food and hopefully obtain the premium prices that are available.

## CHAPTER 2 REVIEW OF LITERATURE

### Introduction

In this review of literature, the history of the organic food industry will be explored in an effort to establish a foundation pertinent to the succeeding information. The size and scope of the industry will also be discussed because of its dynamic nature. Previous studies that looked into consumers' perceptions and attitudes towards organic food will then be examined. Next, studies about consumers' knowledge of the organic industry, its terminology and requirements will be included. And finally, this review will include what influences and motivates consumers to buy organic foods.

### THE HISTORY AND SIZE OF THE ORGANIC FOOD INDUSTRY

#### History of the Industry

Over the last twenty years, consumer concerns over health, food safety, and the environment have led to great expansion and demand in the organic industry (Stevens-Garmon, Huang, & Lin, 2007). This increase in demand led to the creation of the Organic Foods Production Act of 1990 that mandated the United States Department of Food and Agriculture (USDA) to create national organic standards. On October 21, 2002, the USDA created the National Organic Program (NOP) that set these national standards and must regulate the nation's organic products. More specifically, the standards set the labeling, processing, and certifications requirements. The organic standards were instituted to build confidence in American organic foods and stimulate growth in the industry (Oberholtzer, Dimitri, & Greene, 2005).

Organic foods typically garner a higher price in the marketplace, which is one reason why farmers and ranchers might consider organic production. Organic grains held fairly high premiums in 2001. Organic corn sold for 59 percent more than conventionally grown corn. Organic soybeans sold for 177 percent more and organic oats sold for 41 percent more than their

conventionally produced counterparts (Dimitri & Greene, 2002). However, some studies have found that organic systems of production may yield higher profits even without price premiums. This could possibly be due to lower input costs and the occasional higher yields in dry periods as compared to conventional farming. (Welsh, 1999).

### Industry Overview

Organic food sales increased 500 percent between 1994 and 1999 (Dimitri & Greene, 2002). In 2005, organic food sales totaled 13.8 billion dollars, or 2.5 percent of the retail food market (OTA, 2006). Organic food is also becoming more accessible to the average consumer. Organic products were once only available at a small number of retail stores, but can now be found in a myriad of places, such as farmers markets, natural food stores, discount club stores, and conventional supermarkets. In 2000, for the first time, about half (N=\$3.9 billion) of the organic food sales came from conventional supermarkets, instead of natural food stores and farmers markets (Dimitri & Greene, 2002). Furthermore, in 2001, organic products were available in 73 percent of all conventional grocery stores (Food Marketing Institute, 2001). The top-selling organic food category is fresh produce, followed by non-dairy beverages, breads and grains, packaged foods, and dairy products (Dimitri & Greene, 2002).

In an effort to meet the growing demand for organic food, cropland devoted to organic food production has also increased. According to the USDA, certified organic cropland doubled between 1992 and 1997; from 650,000 to 1.3 million acres (Dimitri & Greene, 2002). Organic rangeland and pasture is also increasing to meet the market's demands for organic meat products. In 2005, there was 2.3 million acres of organic rangeland and pasture, which constituted about 0.5 percent of the total U.S. range and pastureland. Across the country, overall certified organic farmland has also increased and for the first time in 2005, all 50 states reported some certified organic land (Economic Research Service, 2002).

New organic products are also being introduced rapidly into the market. For example, in the first half of 2000, over 800 new organic products were introduced. In 2000, the majority of the new products were desserts and in 1999, the majority of new products were beverages (Myers & Rorie, 2000).

## CONSUMER PERCEPTIONS/ ATTITUDES TOWARDS ORGANIC FOOD

### Attitudes/Perceptions

One study of 947 subjects assessed attitudes and beliefs towards organic fruit and vegetable consumption, the most consumed organic food category, and found that survey respondents tended to have positive attitudes towards eating organic fruits and vegetables (Saba & Messina, 2003). Research has found that organic produce is perceived by consumers to be less damaging to the environment and healthier than conventionally grown food (Schifferstein & Ophuis, 1998). Other research has indicated that organic food consumption is partly related to a decrease in confidence in conventionally grown products and an overall increase in concern for health (Alvensleben, 1998).

### Health Concerns

A study by Schifferstein and Ophius highlighted that consumers are most concerned with their health and found that this is the predominant reason for organic food consumption (Schifferstein & Ophuis, 1998). According to a Food Marketing Institute survey in 2001, 37 percent (N=370) of shoppers said that they purchased organic food to maintain their health, and of those shoppers, approximately 44 percent (N=162) had purchased organic food in the previous 6 months. (Food Marketing Institute, 2001). This could potentially be contributed to several food scares within the last several years and the loss of consumer trust in the regulation of America's food supply (Miles & Frewer, 2001).

## Risk Concerns

Research has shown that consumers perceive relatively high risk associated with eating and producing conventionally grown food because of the long-term and unknown health effects that they associate with them (Williams & Hammitt, 2002). The same study also indicated that over 90 percent (N=630) of respondents thought that a way to reduce pesticide residue risk is by consuming organically grown produce instead of conventionally grown food. Approximately 50 percent (N=350) of respondents thought that by consuming organic food there would be a risk reduction due to natural toxins and microbial pathogens (Williams & Hammitt, 2002). Another study also pointed out that in 2002, most consumers associated organic products with health at different levels. The same study also concluded that even if organic products are more expensive and harder to find, that most consumers view them positively (Zanoli & Naspetti, 2002).

## CONSUMER KNOWLEDGE OF ORGANIC INDUSTRY AND UNDERSTANDING OF ORGANIC TERMINOLOGY

### Terminology

For the purposes of this study, it is necessary to investigate consumers' knowledge of the organic industry by assessing their knowledge of the terms and regulations associated with organic food products. Confusion over organic and natural terms may have been inadvertently caused by different labeling techniques used by producers, such as "natural," "all natural," "hormone free," and "antibiotic free". In terms of meat, the average consumer may not perceive a clear difference between the terms "organic" pork and "natural" pork. And in the case of beef, consumers associate no antibiotics and no hormones with the natural label (Diel & Associates, 2001). But the average consumer may also not know that the USDA Food and Safety Inspection service does not even allow growth hormones in pork or poultry production for consumption

(Economic Research Service, 2006). Pork labels can write “no hormones added” but must be followed by a disclaimer stating that federal regulation prohibits the use of hormones.

In an article published in the New York Times (2006), the issue of consumer confusion is summed up by stating, “Probably the most confusing and fungible word in all of food labeling is the term “natural.” Fungible is used here to mean interchangeable with other words that may seem synonymous to the term “natural.” Additionally, the article describes that when applied to meat, “natural” can mean many things, or almost nothing. This simple statement shows that the consumers are confused about the true meanings of the terms associated with organic foods. Despite this confusion, organic labels do have strict guidelines, and must be certified to participate and pass inspections to qualify (Warner, 2006).

#### Public Information Sources

In order to explore the confusion among consumers, the source that consumers are getting their information about organic products should be analyzed. Less than two percent of Americans are directly involved with production agriculture, therefore the general public has little or no knowledge of agricultural practices and food processing (Meyers & Chodil, 2006). The general public is more familiar with and susceptible to the information given by the media, who are also not agricultural experts and focus more on reporting controversial messages (Zimbelman, Wilson, Bennett, & Curtis, 1995). The media have been found to be the most trusted source for consumers to get information on food risk-related issues (Frewer, Howard, Hedderly, & Shepherd, 2006).

The media arguably plays a large role in communicating the food label standards. Labels are much too small to include all of the information about the extensive label standards, regulations and policies, so it is partly the duty of the media to convey the messages of what the label means. However, it is known that the media do not usually use reputable sources when

reporting food issues. Scientific or government regulators are rarely cited for information in stories because the journalists are focusing on controversy and what is going to attract viewers. Many times the media will get sources stating opinion about organic production instead of using factual sources (Meyers & Chodil, 2006).

Meyers and Chodil (2006) also found that the media, in general, seems to favor organic food and its ideology. Yet, by not producing balanced and objective coverage of agricultural topics with scientific evidence or alternate views, they are only perpetuating their favored ideology instead of providing the facts that consumers can use to make their own decisions (Meyers & Chodil, 2006). The media, in this study, also chose to leave out that the supposed health risks of conventionally produced food are not fact and neither are the supposed health benefits associated with organically produced food (Meyers & Chodil).

The USDA makes no statements that organically produced food is safer or more nutritious than conventionally produced food and the NOP does not address food safety or nutrition (USDA, 2002). However, organic production proponents make undocumented claims stating,

Organic products grown in healthier soil contain higher levels of nutrients, and many taste better than their conventional counterparts. Organic fruits and vegetables test at minimal or zero pesticide residue levels and, with the passage of the USDA organic standards, consumers can now be assured producers follow earth-friendly cultivation and grazing practices (Organic Consumers Association, 2004, pg 1).

Whether or not organic food is more nutritious or tastes better is still up for debate and requires further research.

## CONSUMER INFLUENCES ON BUYING DECISIONS OF ORGANIC FOOD

### The Impact of Consumer Knowledge and Attitude

It is also important to connect consumers' perceptions and knowledge to buying decisions and locate any other buying influences that are driving consumers spending habits. One study that surveyed 675 college students in 2007 found that an individual's self-perceived subjective knowledge, had a significant and direct influence on college students' purchase of organic food and consumption behaviors (Liu, 2007).

Another study (Yiridoe, Bonti-Ankomah, & Martin, 2005) found that although there is some knowledge about organic food and consumers typically understand the broad issues of organic food, they may tend to not understand the complexities of the organic industry or production practices (Yiridoe, Bonti-Ankomah, & Martin, 2005). However, consumers do desire to know more about the industry and find out why it is technically different from conventionally produced food (Zanoli & Naspetti, 2002). This uncertainty about the true attributes of the organic farming practices, skepticism about organic labels and product misrepresentation has been found to be holding some consumers back from purchasing organic food (Yiridoe, Bonti-Ankomah, & Martin, 2005).

One study of 947 subjects found that consumers tended to hold positive attitudes towards eating organic produce. This attitude was found to be a significant predictor of consumer intention to eat organic produce and was found to have a positive and significant effect on the self-reported consumption of organic produce (Saba & Messina, 2003). Based on these findings, it is safe to say that positive attitudes towards organic food can have significant impacts on consumers' buying decisions.



### Health Influences

According to Liu (2007), there is a significant correlation between the level of the respondents' health consciousness and their organic food purchasing and consumption behavior. In this study, consisting of 675 college student respondents, a test was given to determine the likelihood of health consciousness between the high organic food consuming group and the low organic food consuming group. Results were found to be significantly correlated to their organic food purchasing and consumption behavior (Liu, 2007).

Health and well-being are significant drivers and the most important motivation for the purchase of organic products (Zanoli & Naspetti, 2002). Concern for human health and safety are also key factors of consumer preference motivating consumers to buy organic food as a way to place an investment on their health (Yiridoe, Bonti-Ankomah, & Martin, 2005).

### Deterrents from the Purchase of Organic Food

The appearance of organic food is typically not as uniform or aesthetically pleasing as conventionally grown foods and this is generally perceived as deterrent from the purchase of organic food by consumers (Zanoli & Naspetti, 2002). Price has also been found to be a negatively influencing aspect of organic foods, especially by occasional consumers. For example, one study found that 74 percent (N=44) of respondents linked organic food to an unfavorable consequence on the family budget (Zanoli & Naspetti, 2002). Another purchasing deterrent found in this study was organic food's inconvenient point-of-sale locations; the fact that it is not easily available and the process is time consuming (Zanoli & Naspetti, 2002).

### Conclusion

To conclude, the organic industry is expanding and growing constantly, and many efforts have been made to research this phenomenon. Consumer perceptions and attitudes towards organic food were found to be overall positive and the perceptions seem to have an impact on

buying habits. Although the general public may be confused about some organic labeling practices, requirements and practices and this may be partially do to media influences, they do desire to be more informed. It has also been found that a concern for health is a key factor in consumers' decisions to purchase organic food.

## CHAPTER 3 METHODS

The purpose of this study is to investigate college students' perceptions and knowledge of organic food products through survey method, in order to inform farmers and ranchers of the future market's demands.

This study is also to gather information about buyer preferences that will hopefully help farmers, ranchers, producers and commodity groups communicate more effectively about the definitions of their products' standards and modify (if necessary) their marketing techniques, communication strategies and/or farming and ranching practices to obtain the highest price possible.

### Sample

A convenience sample of California Polytechnic State University, San Luis Obispo students enrolled in upper division agricultural education leadership class (AGED 404) as well as students enrolled in a lower division agricultural economics course (AGB 212) and a lower division agriculture journalism course (JOUR 205) completed the survey. The journalism class contained both agriculture majors and non-agricultural majors.

This sample was chosen because college students have been living on their own and have needed to make choices about what food they purchase and consume. They are also the next largest group that will soon have families and, therefore potential, if not current, organic consumers.

The two class choices were chosen to find the differences, if any, between agriculture upperclassmen students and both agriculture and non-agriculture underclassmen.

### Instrument

The administered survey was created by Alycia Deus for the purpose of this study alone. The final survey included 14 questions regarding demographics, general perceptions of organic

food and its possible impact on one's health and the environment and organic food consumption and buying habits. This survey was done anonymously and asked no questions that contained any personal identifiers. In order to comply with the exempt research process, students were allowed to participate based on his or her consent.

### Collection of Data

Dr. Scott J. Vernon of the Agricultural Education and Communications department allowed the paper survey to be administered in his upper division (300-400 level) AGED 404, Agricultural Leadership class. Dr. Vernon administered the survey on the morning of June 2, 2009.

Professor Richard Gearhart of the Agricultural Education and Communications department allowed the paper survey to be administered in his lower division (100-200) JOUR 205, Agricultural Communications class. The principal investigator administered the survey on the afternoon of June 3, 2009.

Dr. Michael McCullough of the Agribusiness department administered the survey in his lower division Agricultural Economics class (AGB 212.) Dr. McCullough administered the survey the afternoon of June 4, 2009.

The message read to the survey respondents prior to administering was in script format and stated:

Dear students:

This senior project survey is intended to discover your perceptions and knowledge of the organic food industry. Please fill out the survey as honestly as possible and put any comments in the box on the last page. Please do not put your name on it. Your response will help further farmers' and ranchers' ability to market their products and increase their knowledge about consumer preferences. Thank you.

### Analysis of Data

The raw data was gathered and entered into a Microsoft Excel spreadsheet. The data is graphed and analyzed using bar graphs and percentages to find the frequencies and trends in the answers.

## CHAPTER 4

### RESULTS

In this study, the goal is to investigate college students' perceptions and knowledge of organic food products. A convenience sample of California Polytechnic State University students enrolled in both upper and lower division courses was utilized. The instrument was in the form of a written survey containing 14 questions and was administered by two professors and the principal investigator on June second and June third, 2009 during classes. The survey included both multiple choice and fill-in type questions regarding demographics, perceptions of organic foods, consumption and buying habits of organic foods. The resulting data was entered into a spreadsheet and was further analyzed in the results section.

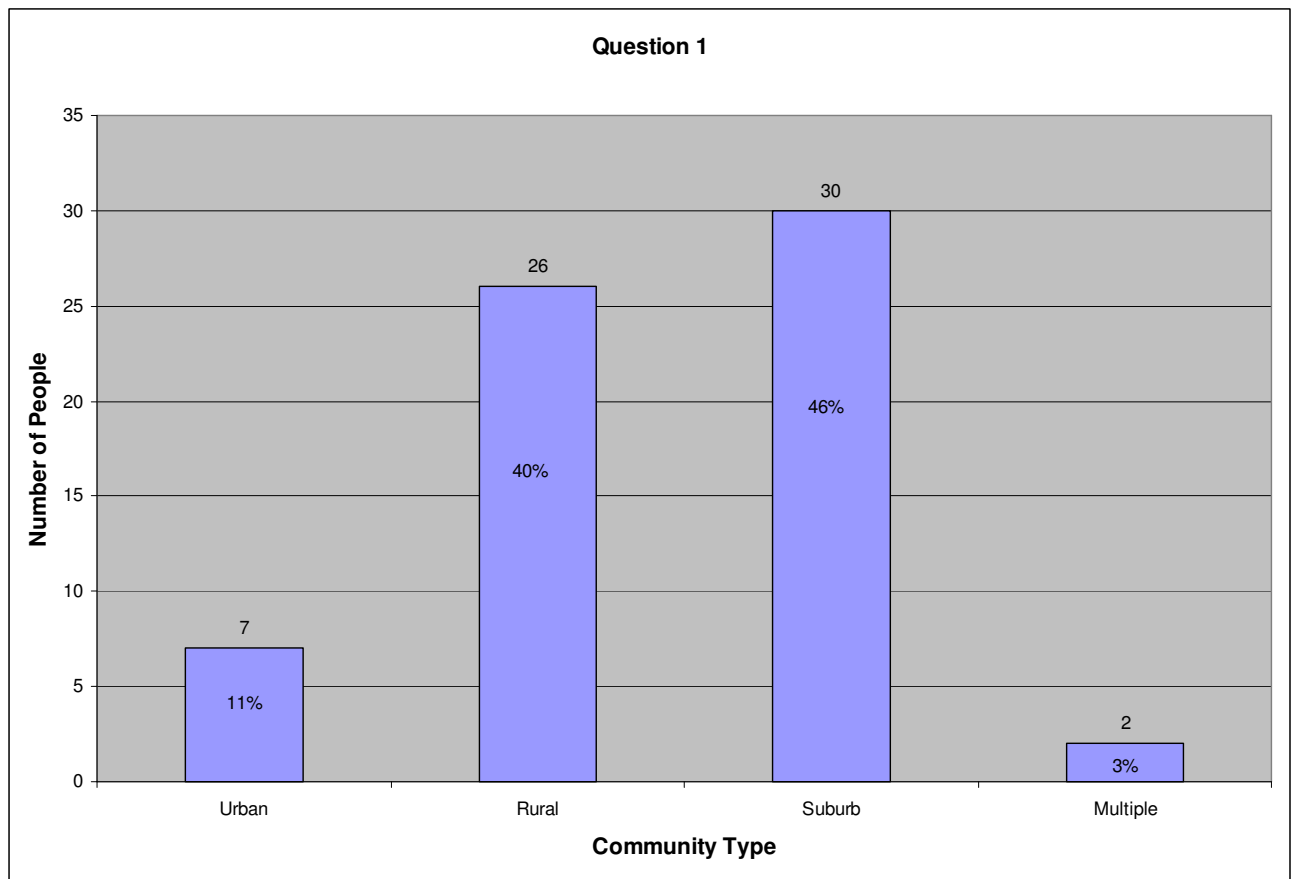
#### Results

In this section, the results of the 14 survey questions are reported indicating any trends, relationships or significant comparisons. Additional graphs and/or charts are utilized where appropriate.

**Question 1: What type of community did you grow up in for the majority of your childhood (ages 1-18)? (N=65)**

Forty six percent (30) respondents indicated they were from a suburb and 40 percent (26) respondents indicated they were from a rural community. Only 11 percent (seven) were from an urban area.

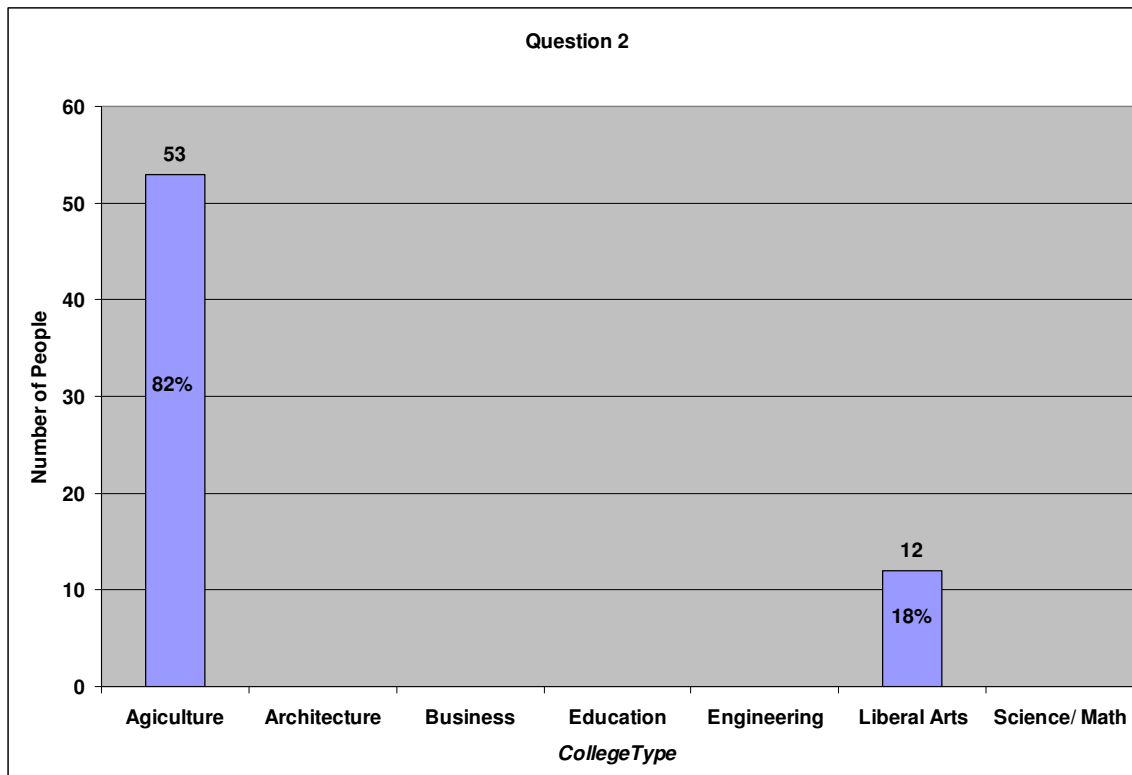
Figure 1. Bar graph of Respondents' Childhood Community Type.



**Question 2: What college are you in? (N=65)**

Eighty two percent (53) of the respondents were from the college of agriculture; the remaining 18 percent (12) were from the college of liberal arts.

Figure 2. Bar Graph of Respondents' College.

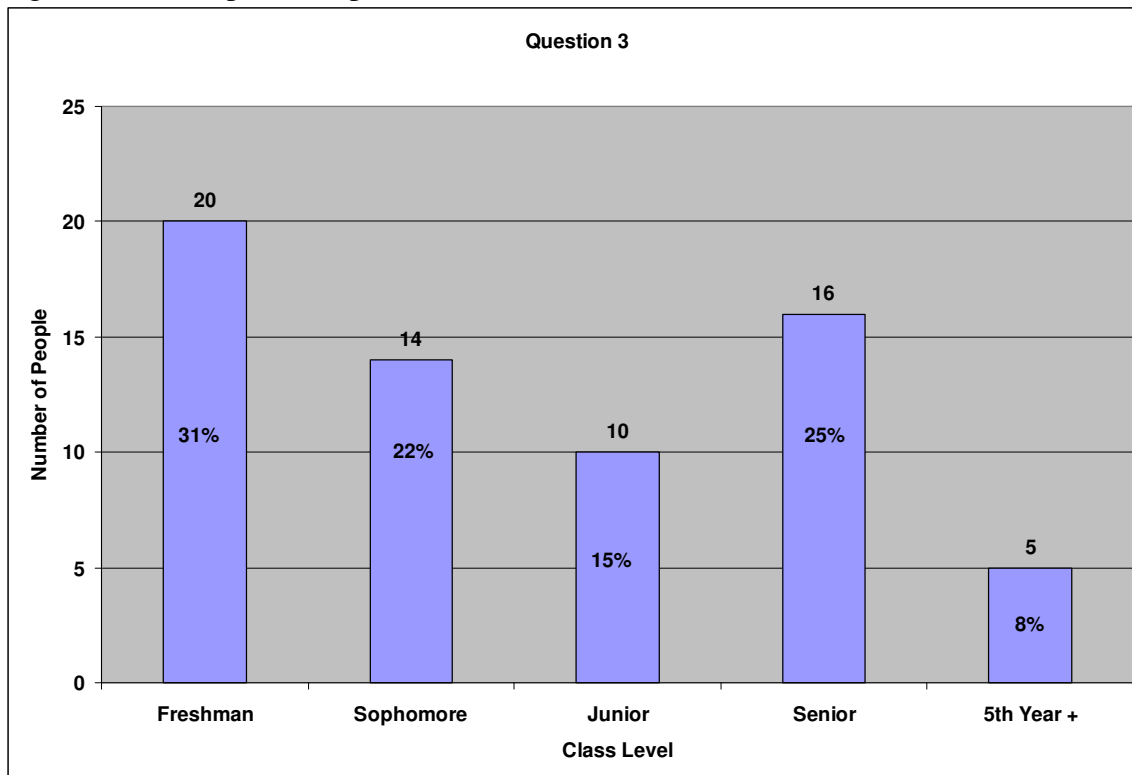




**Question 3: What is your class level? (N=65)**

Thirty one percent (20) of respondents were freshman, 25 percent (16) were seniors, 22 percent (14) were sophomores, 15 percent (10) were juniors, and eight percent (five) were fifth year seniors or beyond.

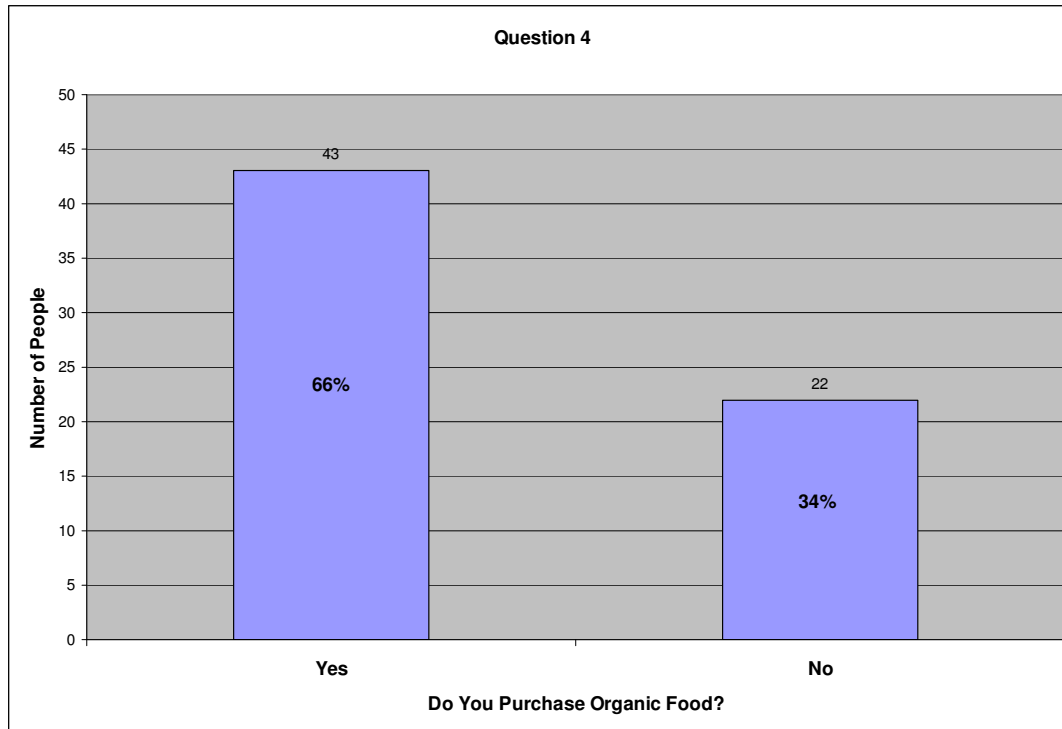
Figure 3. Bar Graph of Respondents' Class Level.



**Question 4: Do you purchase and/or consume organic foods? (N=65)**

Sixty six percent (43) of respondents indicated “yes” and 34 percent (22) indicated “no.”

Figure 4. Bar Graph of Respondents’ Organic Food Purchase and/or Consumption.



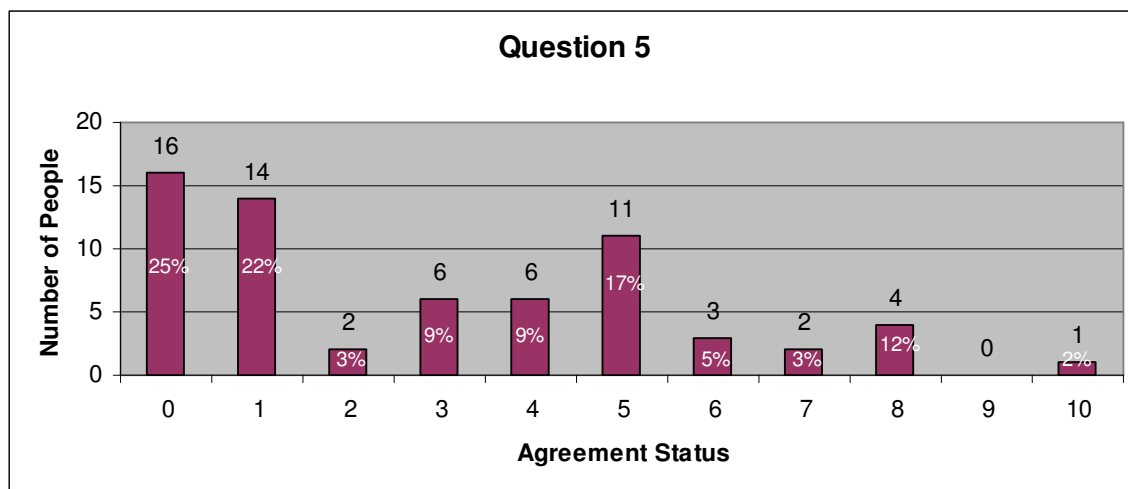
**Question 5: “It is essential that I consume organic foods.” Please circle the number that corresponds to your feelings toward this statement. (N=65)**

Strongly Disagree      Strongly Agree  
0      1      2      3      4      5      6      7      8      9      10

Sixty eight percent (44) of respondents felt some level of disagreement with the statement above.

Seventeen percent (11) were indifferent to this statement, while 15 percent (10) were in some form of agreement with this statement.

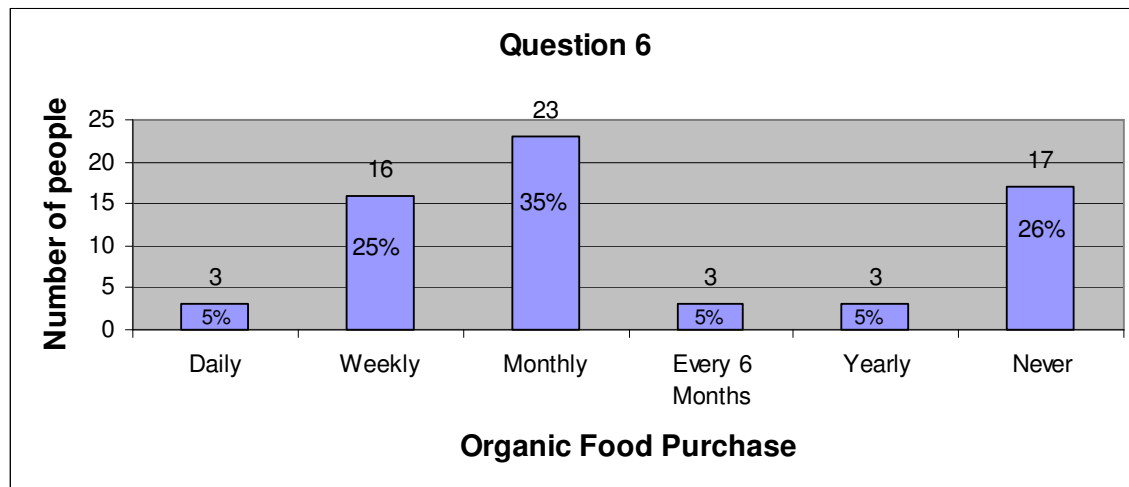
Figure 5. Bar Graph of Level of Agreement with Organic Food Consumption Necessity.



**Question 6: How often do you purchase organic food? (N=65)**

Sixty five percent of respondents (42) buy organic food at least once a month. 35 percent (23) purchase organic food once every six months or less.

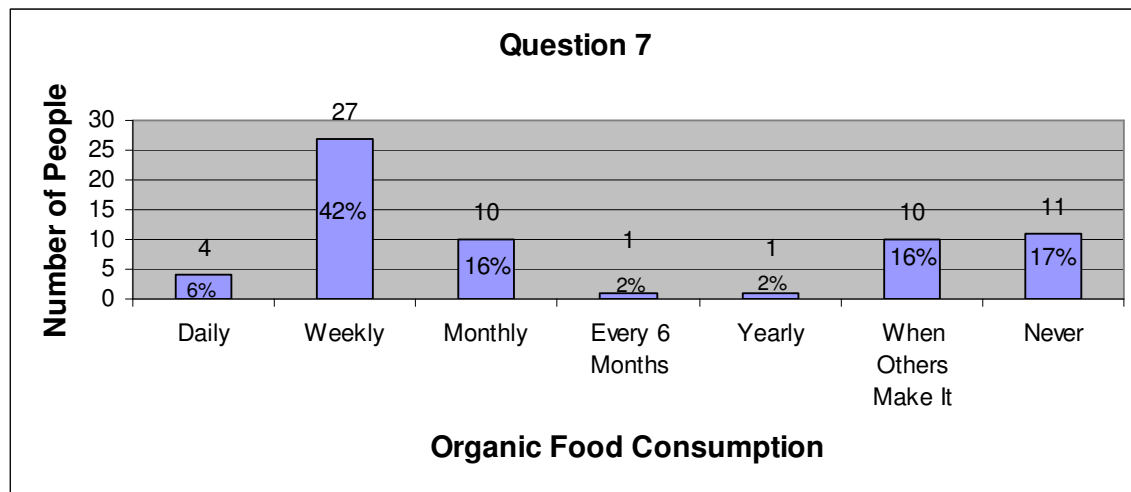
Figure 6. Bar Graph of Organic Food Purchase Frequency.



**Question 7: How often do you consume organic food? (N=64)**

Sixty four percent (41) of respondents indicated that they consume organic food at least once a month. An additional 19 percent (12) said they consume organic food once every six months or less. An additional 17 percent (11) indicated that they never consume organic food.

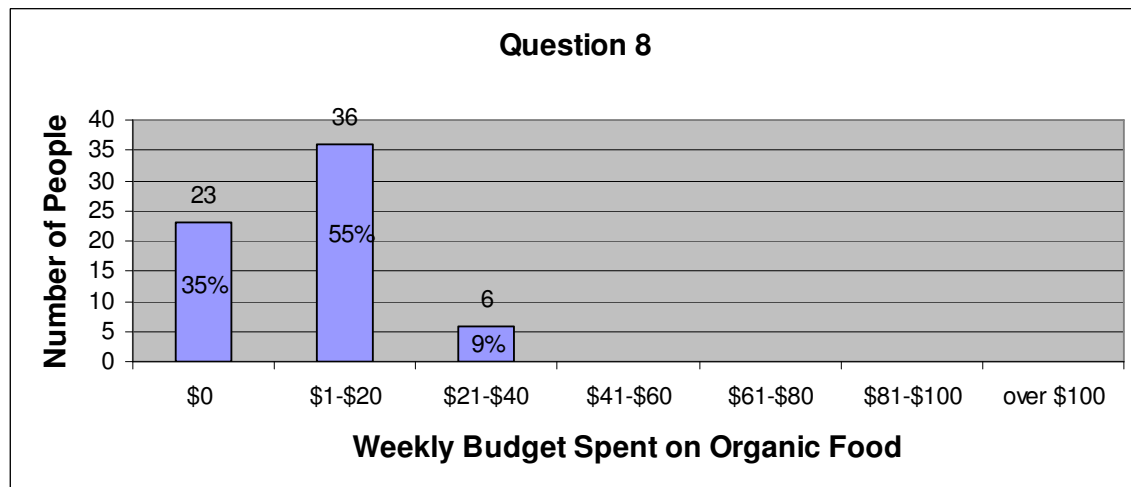
Figure 7. Bar Graph of Organic Food Consumption Frequency.



Question 8: **How much money do you spend on organic food per week?** (N=65)

Thirty five percent of respondents (23) do not purchase organic food, 55 percent (36) of respondents spend between one dollar and 20 dollars, and about nine percent (6) people indicated that they spend between 21 dollars and 40 dollars.

Figure 8. Bar Graph of Weekly Budget Spent of Organic Food.

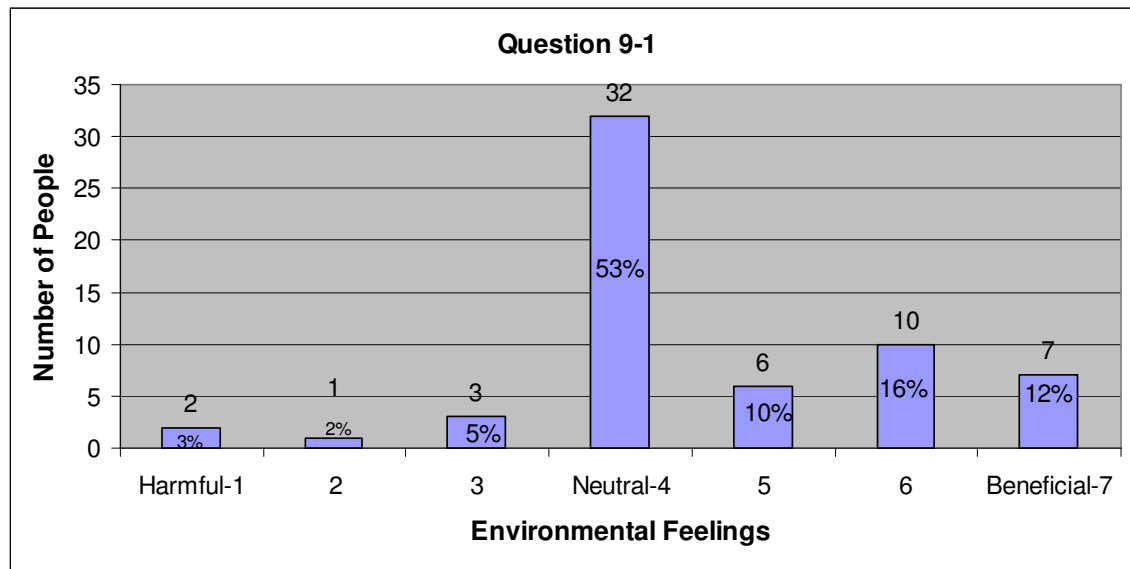


**Question 9-1: Circle the number which best matches your answer.**

**I consume (or do NOT consume) organic food because to me, it is...” (N=61)**

The overwhelming majority 53 percent (32) of respondents felt neutral to the fact that they consume organic food because it either beneficial or harmful to the environment.

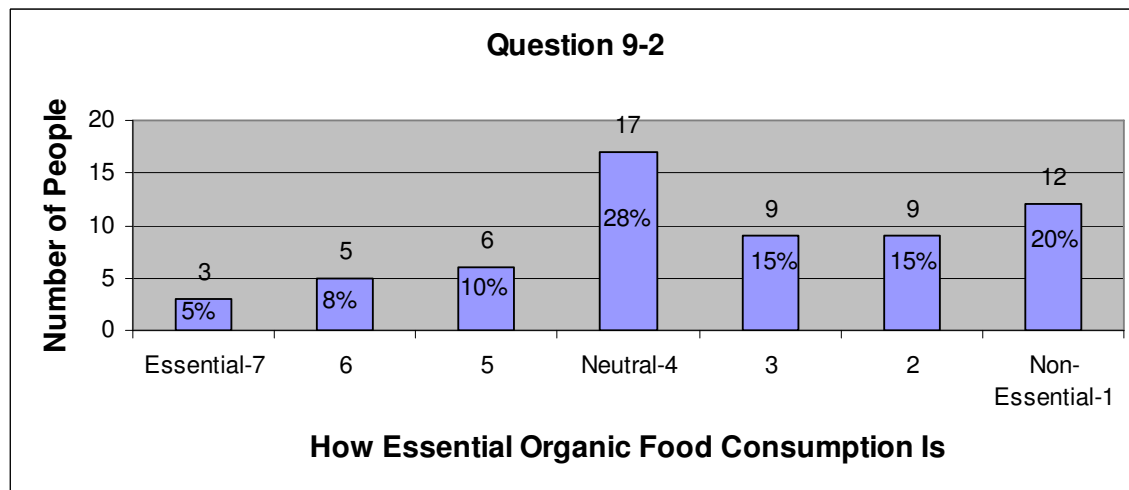
Figure 9-1. Bar Graph of Environmental Feelings towards Organic Food.



**Question 9-2: “I consume (or do not consume) organic food because to me, it is...essential/non-essential.” (N=61)**

Twenty nine percent (17) of respondents felt neutral towards this statement, while 20 percent (12) felt strongly that it is non-essential. There is also 23 percent (14) of respondents who felt that consuming organic food is essential to them in at least some level.

Figure 9-2. Bar Graph of Organic Food Consumption Necessity Rating.

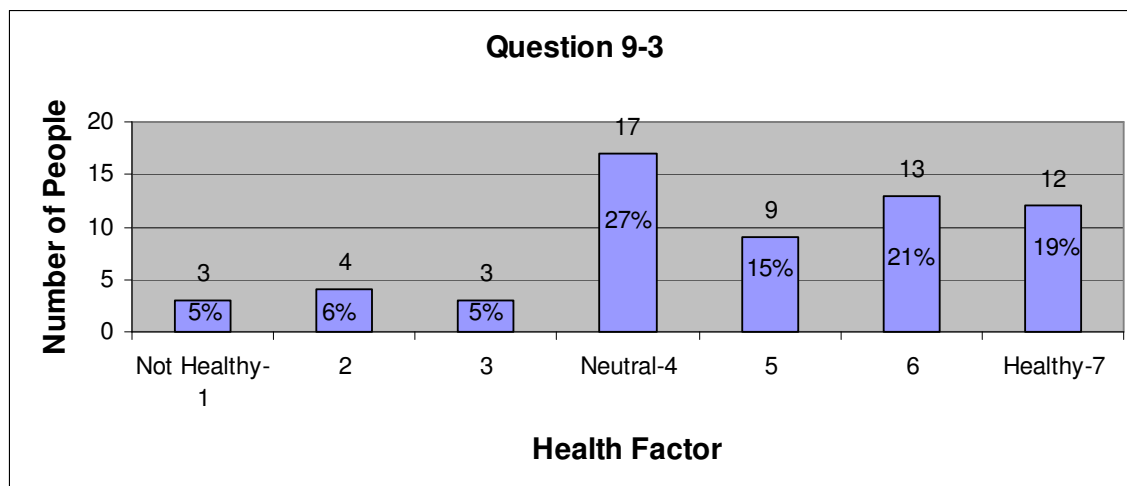


Question 9-3: “I consume (or do not consume) organic food because to me, it is...healthy/not healthy.” (N=62)

Twenty seven percent (17) of respondents felt neutral towards this statement.

Additionally, a majority of people, or 55 percent (34) have some level of tendency to consume organic food because they believe it to be healthy to some extent.

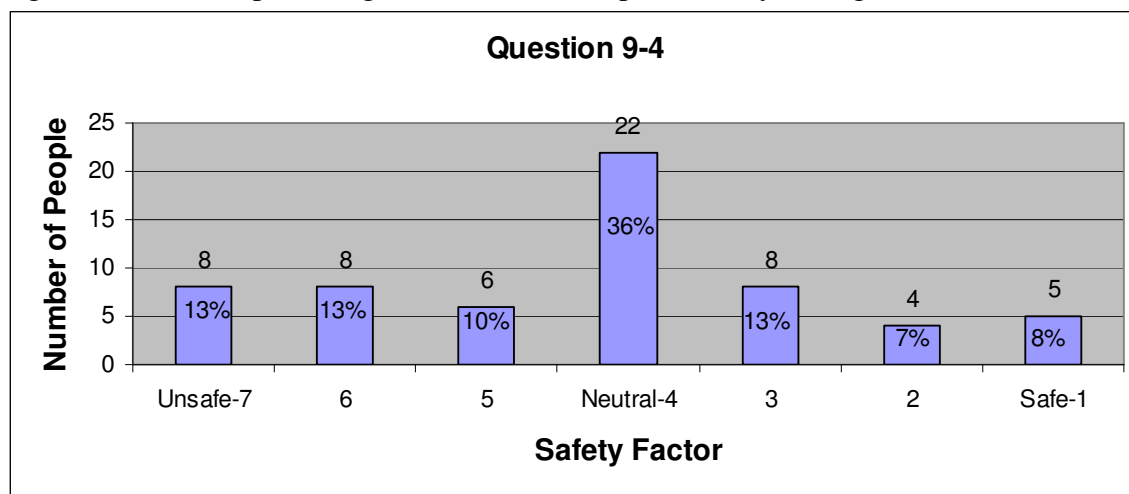
Figure 9-3. Bar Graph of the Health Factor for Organic Food Consumption.



**Question 9-4: “I consume (or do not consume) organic food because to me, it is...safe/unsafe.” (N=61)**

Thirty six percent (22) of respondents felt neutral towards this statement. The 36 percent (22) also felt that it was unsafe to some extent, while about 17 people or 29 percent of respondents consume organic food because they feel it is safe to some extent.

Figure 9-4. Bar Graph of Organic Food Consumption Safety Rating.

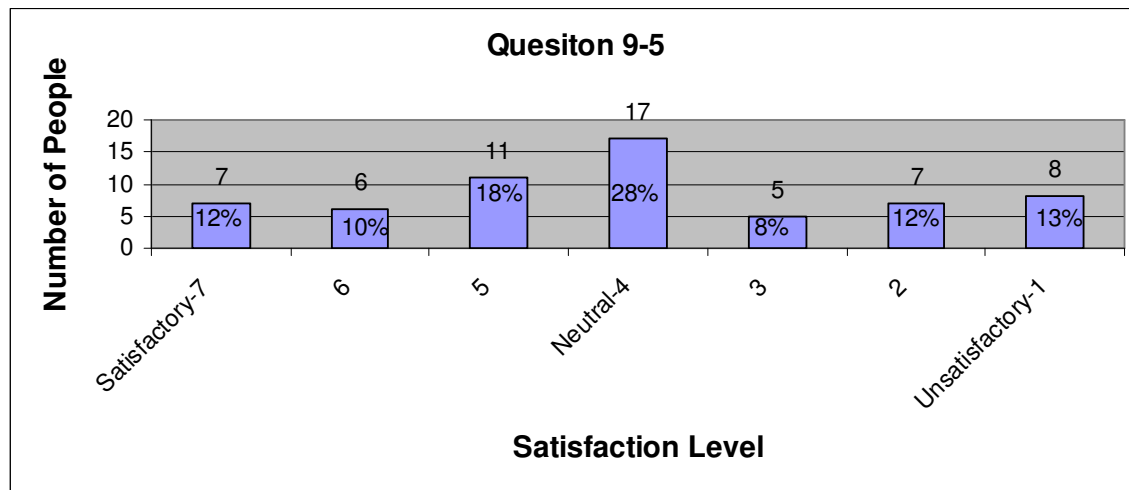


**Question 9-5: “I consume (or do not consume) organic food because to me, it is...satisfactory/unsatisfactory.” (N=61)**

Twenty eight percent (17 people) felt neutral toward this statement; while 24 people or 39 percent of respondents felt at least some level of satisfaction by consuming organic food. There are also 20 people or 33 percent of respondents who felt that consuming organic food is unsatisfactory on some level.



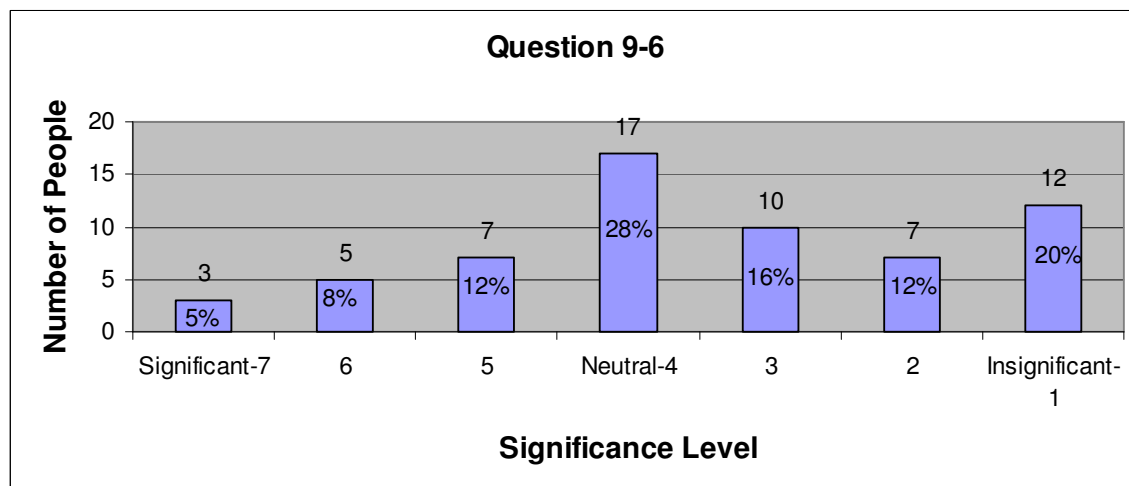
Figure 9-5. Bar Graph of Organic Food Consumption Satisfaction Level.



**Question 9-6: “I consume (or do not consume) organic food because to me, it is...significant/insignificant.” (N=61)**

Seventeen people or 28 percent of respondents felt neutral towards this statement. However there is another large group of 12 people or about 20 percent of people who felt that they do/do not consume organic food because it is strongly insignificant to them.

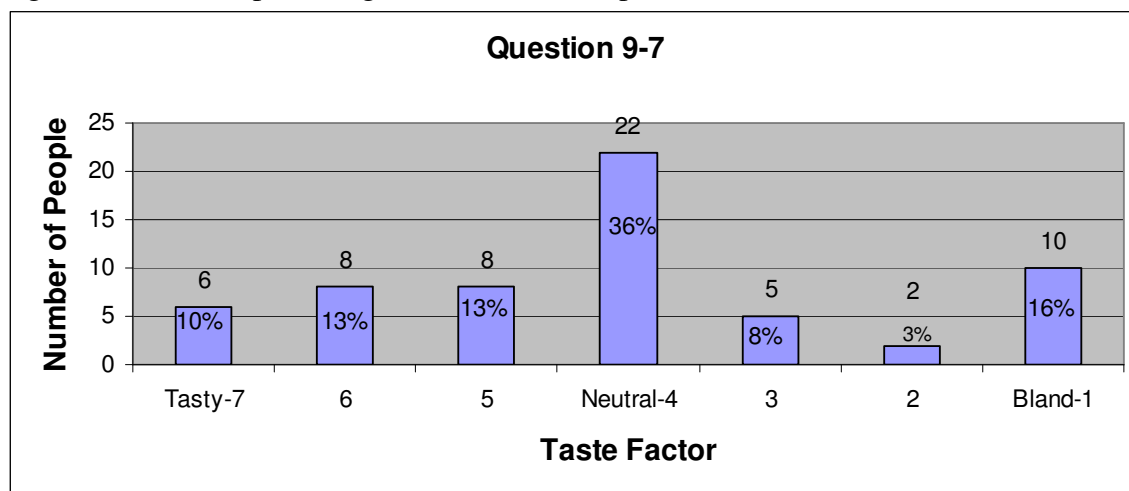
Figure 9-6. Bar Graph of Organic Food Consumption Significance Level.



Question 9-7: “I consume (or do not consume) organic food because to me, it is...tasty/bland.” (N=61)

The majority of respondents (36 percent or 22 people) felt neutral towards this statement. An additional 17 people or 28 percent felt organic food is bland to some extent and 22 people or another 36 percent felt that organic food is tasty to some extent.

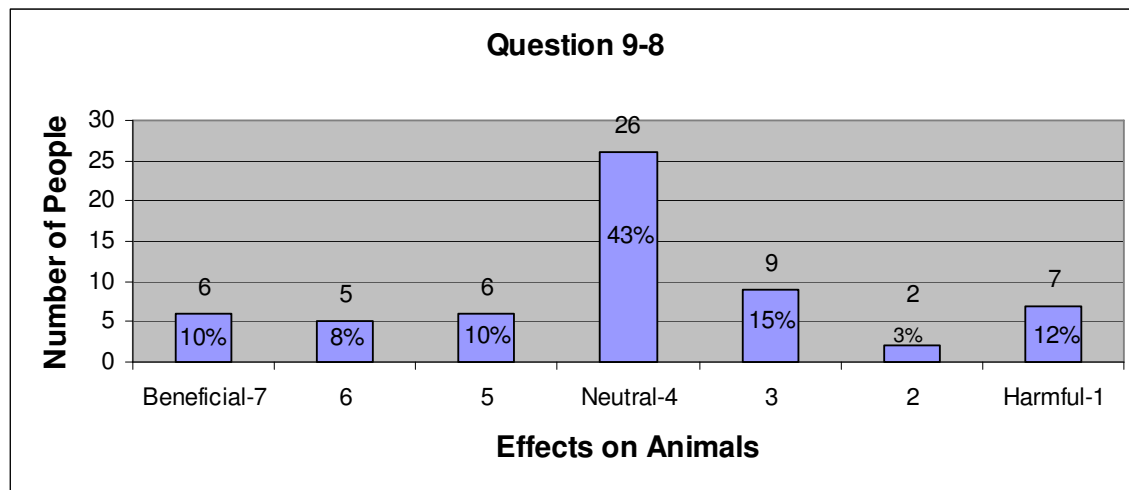
Figure 9-7. Bar Graph of Organic Food Consumption Taste Factor.



Question 9-8: “I consume (or do not consume) organic food because to me, it is...beneficial to animals/ harmful to animals.” (N=61)

The majority of respondents fell into the neutral category where 26 people or 43 percent felt neutral about this statement. Eighteen students or 30 percent of students felt that a reason for consuming or not consuming organic food is because it is harmful to animals to some degree. Seventeen students or 28 percent of the respondents that consume organic food because to them it is beneficial to animals to some extent.

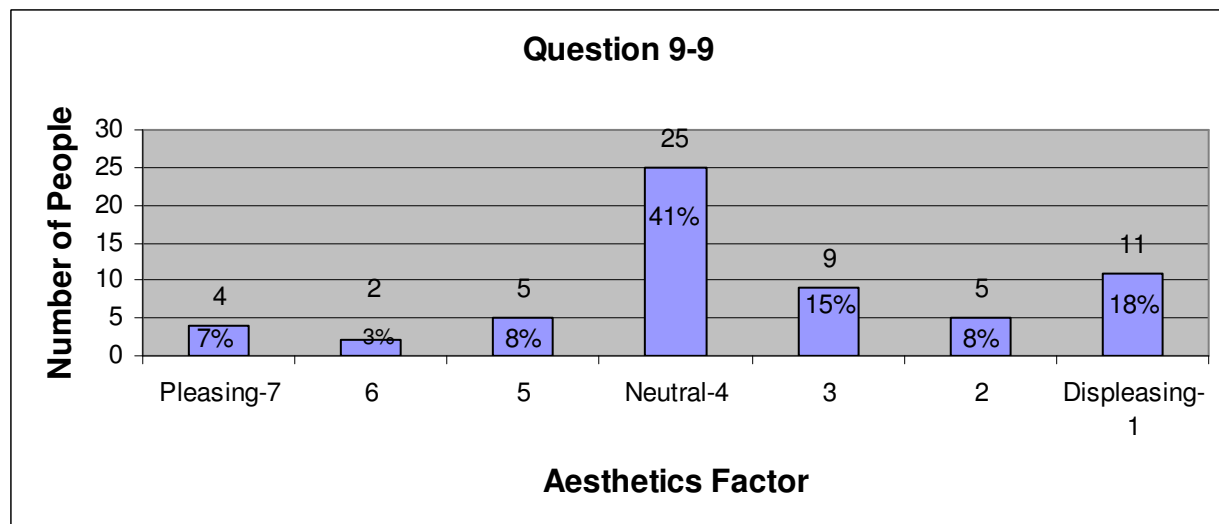
Figure 9-8. Bar Graph of Organic Food Consumption Effects on Animals Factor.



Question 9-9: “I consume (or do not consume) organic food because to me, it is...aesthetically pleasing/ aesthetically displeasing.” (N=61)

Forty one percent (or 25 students) felt neutral to this statement. Twenty five students or about 41 percent also felt that organic food is aesthetically displeasing to some extent. A small portion (18 percent, or 11 students) felt organic food was aesthetically pleasing to some extent.

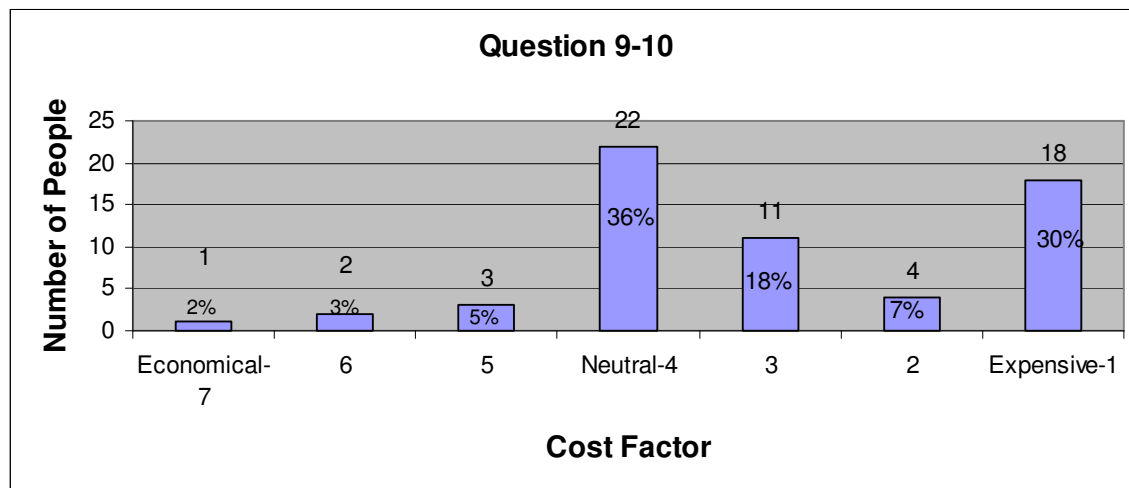
Figure 9-9. Bar Graph of Organic Food Consumption Aesthetics Factor.



**Question 9-10: “I consume (or do not consume) organic food because to me, it is...economical/ expensive.” (N=61)**

Thirty six percent (22 respondents) felt neutral toward this statement. However, a vast majority of respondents (33 students) or 54 percent of students felt that organic food was expensive to some extent; 18 of those students (30 percent) putting the maximum expense factor possible.

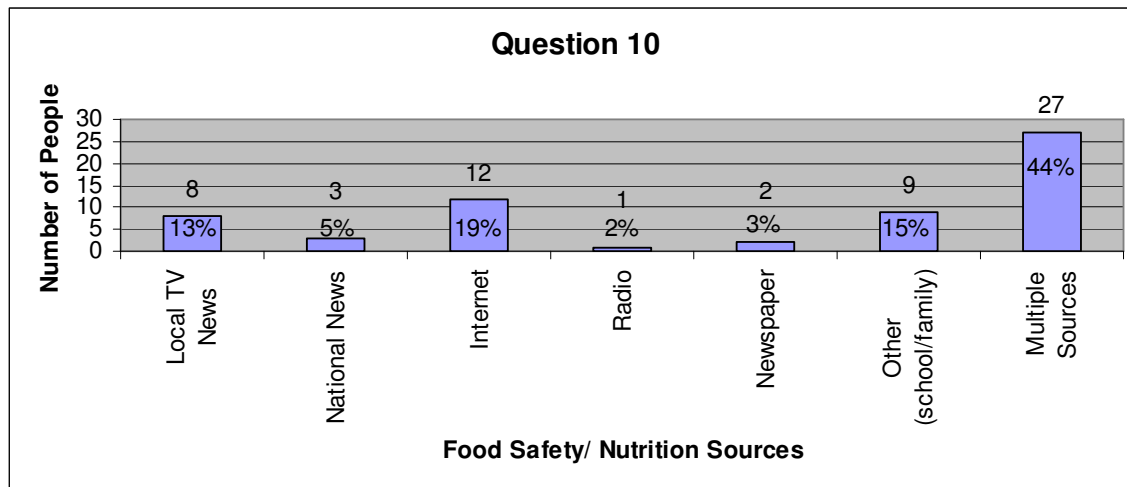
Figure 9-10. Bar Graph of Organic Food Consumption Cost Factor.



**Question 10: Where do you get your food safety and nutritional updates from? (N=62)**

The majority of respondents or 44 percent, (27 respondents) indicated they use multiple sources to get their updates. In addition, 12 students or 19 percent of students use the internet, while about 8 students or 13 percent utilize the local TV news.

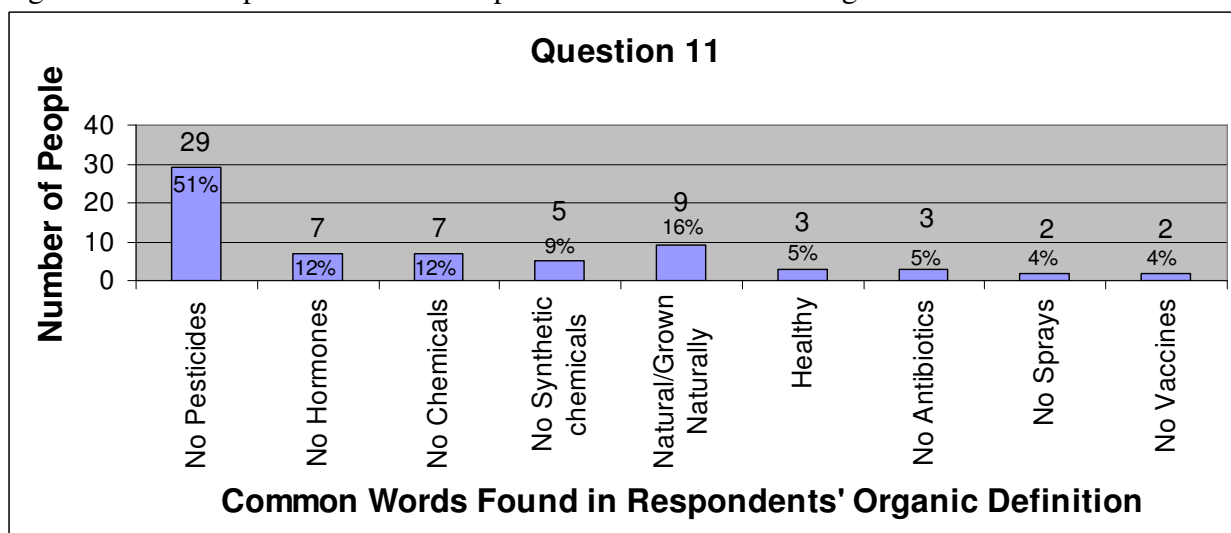
Figure 10. Bar Graph of Media Sources for Food Safety and Nutritional Information.



**Question 11: Please provide a brief definition of the term, “organic” that you think is closest to the United States Department of Agriculture’s (USDA’s) definition. (N=57)**

Forty seven percent or 29 students included, in some form, that organic has to do with the use of no pesticides. The breakdown continues counting the number of times that each group of words was found. The chart shows more than 57 answers because some respondents included more than one area in their answer and some respondents did not include any of these areas. These, however, were the most common words or phrases found in the pool of answers.

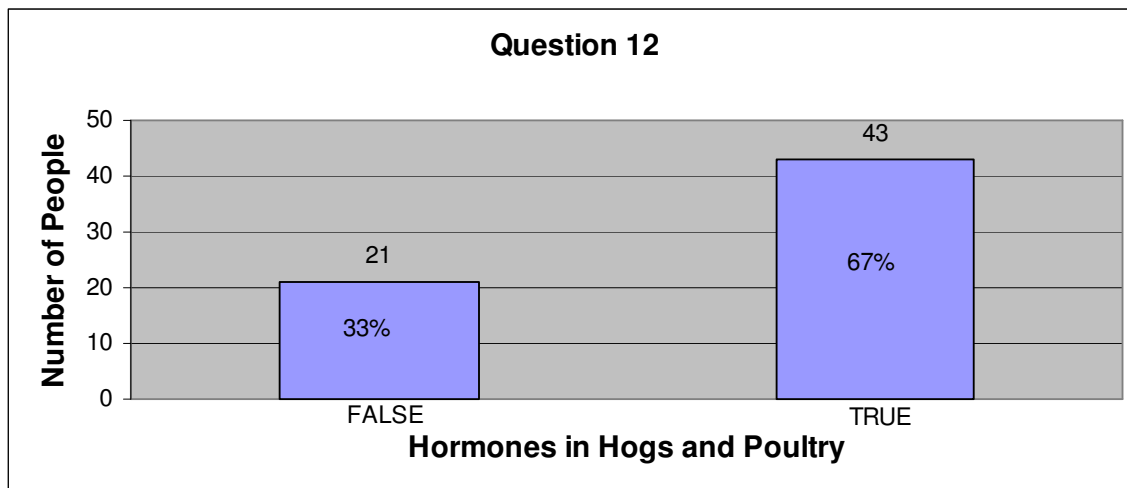
Figure 11. Bar Graph of Common Responses for Definition of Organic.



Question 12: **TRUE or FALSE: Hormones are allowed in raising hogs or poultry in the United States.** (N=64)

Thirty three percent of respondents or (21 people) put false as their answer to the above question, which is the right answer. Sixty four percent (43 students) marked that this statement is true, which is incorrect.

Figure 12. Bar Graph of Hormone Use in Hogs and Poultry Responses.



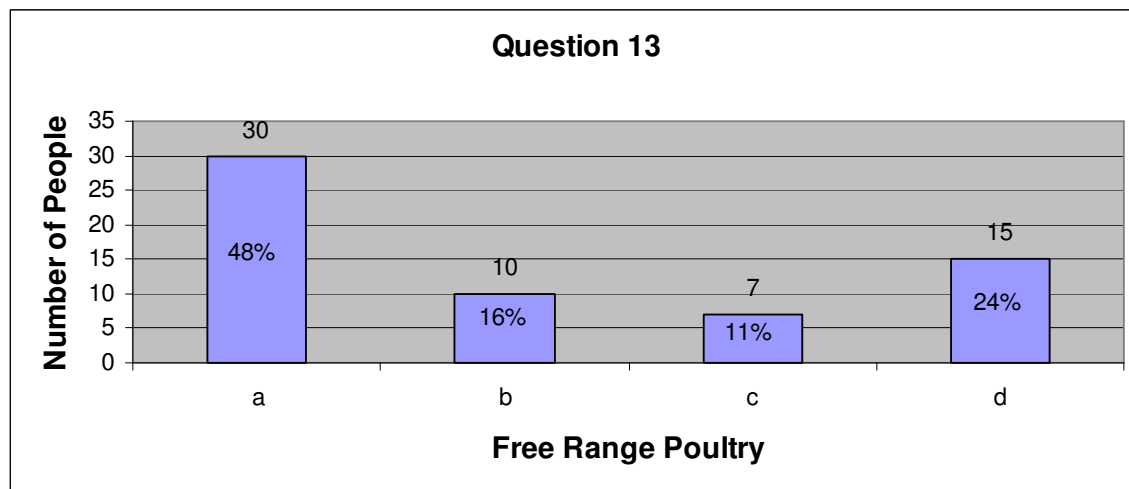
Question 13: According to the USDA, in order for poultry to be labeled as “free range” or “free roaming” the poultry must:

- a. be allowed access to the outside.
- b. be allowed to fly freely about the property and have access to unlimited feed
- c. be allowed to access the outside and be fed organic or natural feed.
- d. be required to live outside for at least 75% of their lives.

(N=62)

Forty eight percent (30 students) indicated the correct answer “A,” whereas 52 percent (32 students answered this questions incorrectly by guessing either B, C, or D.)

Figure 13. Bar Graph of Free Range Poultry Definition.



### Summary of Results

It is important to note that overall, the college students' perceptions towards organic food were in general, fairly neutral. About half the students were raised in rural areas and the other half were raised in suburban areas. The majority indicated that they do purchase organic food on occasion and the average amount spent on organic food was less than twenty dollars. A main reason for consuming organic food was the belief that it was healthy. Additionally, some reasons for not consuming organic food were found to be a perceived bland taste and displeasing aesthetics of organic food.

The results also indicated some information about the college students' knowledge of organic and natural food terms. When students were asked to give the USDA's definition of "organic," the majority of responses believed that organic implies a lack of use of pesticides for organic food. Students were also asked about the use of hormones in poultry and hog production in the United States. The majority of students believed that hormones are allowed in the production of poultry and hogs.

## Results and Discussion

The results indicated from the overall survey were unique. Previously, it was thought that most people, in general, would favor organic food over conventional food. However, with the almost even spread of rural to suburban respondents, was a neutral feeling towards organic food. The extensive chart option used to indicate answers for question number nine did not necessarily reveal the results that were intended. The respondents were asked to rate their feelings toward a statement on a scale from one to seven. Originally, this question was designed to hopefully find strong results by scattering the respondents to the extremes. However, a lot of respondents felt neutral towards the statements. It is possible that the questions were either too vague or too confusing. The questions also could have possibly made respondents think that the surveyor wanted them to feel a certain way. Unfortunately, sometimes with multiple choice questions respondents are not as free to think of their own responses. However, multiple choice questions are easier to evaluate, but does not get as many unique responses as a fill-in type question would. The additional comments box also received some interesting responses by a small amount of respondents who felt strongly about the issue. Some comments in the additional comments box indicated that organic food changed their life, whereas others indicated that they were extremely against organic food and will never purchase it.

Students also appeared to be split on their knowledge of organic and “natural” terminology. The respondents were very abreast of the knowledge of the term, “free range” poultry, with the majority of the students choosing the correct answer that poultry need to be allowed access to the outdoors to be considered free range. Conversely, the majority of the students did not know that hormones are not allowed in domestic pork and poultry production.



## CHAPTER FIVE

### CONCLUSIONS AND RECOMMENDATIONS

#### Conclusions

This study was successful in compiling information about college students' perceptions and knowledge of the organic food industry. The study also found a positive relationship between perception and spending habits. The more a student viewed organic food positively, the more likely they were to spend more money on organic products. Likewise, there was a negative association between the price point and aesthetics of organic food and the students' spending habits. It also, however, went somewhat against the majority of the research that had come before this survey that found most people viewing organic food positively. This could possibly be due to the lack of range of areas of study or perhaps the limitations of choosing students from the same university.

Additionally, the respondents' knowledge of the "free range" term for poultry was fairly strong. However, the majority of students did not know that hormones are not allowed in pork and poultry production in the United States. This could possibly be due to many factors, but one guess is that "free-range" or "cage-free" poultry has been more publicized, when compared to the hormones factor. This could also be due to the fact that the disclaimer for poultry and pork is written in fine print after an asterisk and consumers might not follow up on the asterisk to notice that it reads, "Hormones are not allowed in poultry production in the United States."

Overall, the college students' perceptions toward organic agriculture were fairly neutral. However, there were a few students who stood out as outliers on both ends of the spectrum. The negative feelings of concerns for appearance and price could be a small indication that organic food is not necessarily going to replace conventional agriculture any time in the near future. The survey found that the main reasons for the respondents' consumption of organic food were that

organic food was perceived to be healthy and, in some cases, the respondents felt that it was beneficial to the environment on some level. This study helped gauge what college students know about organic food and helped to gather information about their opinions and perceptions toward organic food. The study accomplished its main purposes in figuring out how college students perceive organic food in general and what can affect their buying decisions.

These results are, however, encouraging. The fact that students did have some knowledge about organic foods is a positive to get more of the public aware of the facts. Approximately 44 percent of respondents also indicated that they receive their food safety and nutritional information from multiple news sources. This is also good to know that students are working to get a more balanced view of the issues surrounding organic food. It also can help assist farmers and ranchers to market their product more effectively by knowing how much the consumers know about the product.

### Recommendations

An outcome of this study is to conduct follow-up research. The following are recommendations based on this senior project:

1. Conduct a study that can specifically indicate the effect that community type has on their view and knowledge of organic food.
2. Conduct a study that indicates how the respondents' year in school affects their knowledge and perception of organic food.
3. Research the differences between majors and what types of majors are more and/or less likely to feel a certain way towards organic food and the buying habits of these groups.
4. Conduct a study that will specifically indicate how the college students' knowledge of organic food affects their buying decisions and perceptions towards organic food.

5. Conduct a study to determine how the different types of news media sources a student uses, can influence his or her perceptions and knowledge of the organic food industry.
6. Conduct a study that will indicate what area of study knows the most about organic food and which majors are more likely to view organic food a certain way.
7. Include more questions that can directly indicate the respondents' knowledge of the organic food industry.
8. Eliminate all items that do not include a question similar to number nine, with a scale of numbers ranging from one end of the spectrum to another. It produced repetitive results that were along the middle that could have possibly been skewed.
9. Conduct a study that investigates different majors of study and how the agriculture majors differ from those of the general student population.
10. Conduct a study at a liberal arts campus to find how different types of institutions perceive organic food when compared to that of a polytechnic institution.

This senior project provides ample areas of study for those interested in the consumption of, buying patterns and perceptions and knowledge of organic food. This study can also be utilized as a resource for farmers and ranchers looking to learn about their college student customer base.

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## **APPENDICES**

## Appendix A- Questionnaire

The results from this organic food survey will help farmers and ranchers to be more marketable in the increasingly competitive global market. By assessing college students' knowledge and perceptions towards organic food, farmers can more easily provide for what the market demands.

Please circle the letter that best matches your answer unless otherwise indicated.

1. What type of community did you grow up in for the majority of your childhood (ages 1-18)?
  - a. Urban
  - b. Rural
  - c. Suburb
2. What college are you in?
  - a. College of Agriculture
  - b. College of Architecture and Environmental Design
  - c. College of Business
  - d. College of Education
  - e. College of Engineering
  - f. College of Liberal Arts
  - g. College of Science and Math
3. What is your class level?
  - a. Freshman
  - b. Sophomore
  - c. Junior
  - d. Senior
  - e. 5<sup>th</sup> Year Senior or beyond
4. Do you purchase and/or consume organic foods? Please circle one:    Yes        No
5. "It is essential that I consume organic foods." Please circle the number that corresponds to your feelings toward this statement.

Strongly Disagree

0      1      2      3      4      5      6      7      8      9      10

Strongly Agree

6. How often do you purchase organic food?
  - a. At least once a day
  - b. At least once a week
  - c. Once a month
  - d. Once every six months
  - e. Once a year
  - f. Never
7. How often do you consume organic food?
  - a. At least once a day

- b. At least once a week
- c. Once a month
- d. Once every six months
- e. Once a year
- f. Only when others prepare it for me
- g. Never

8. How much money do you spend on organic food per week?
- a. \$0
  - b. \$1- \$20
  - c. \$21- \$40
  - d. \$41- \$60
  - e. \$61- \$80
  - f. \$81- \$100
  - g. over \$100

9. Circle the number which best matches your answer.

**“I consume (or do NOT consume) organic food because to me, it is...”**

Beneficial to Environment	7	6	5	4	3	2	1	Harmful to Environment
Essential	7	6	5	4	3	2	1	Non-essential
Healthy	7	6	5	4	3	2	1	Not Healthy
Safe	7	6	5	4	3	2	1	Unsafe
Satisfactory	7	6	5	4	3	2	1	Unsatisfactory
Significant	7	6	5	4	3	2	1	Insignificant
Tasty	7	6	5	4	3	2	1	Bland
Beneficial to Animals	7	6	5	4	3	2	1	Harmful to Animals
Aesthetically Pleasing	7	6	5	4	3	2	1	Aesthetically Displeasing
Economical	7	6	5	4	3	2	1	Expensive

Please fill in any other reasons that were not covered, here:

- 
10. Where do you get your food safety and nutritional updates from?
- a. Local TV News
  - b. National News Sources



- c. Internet News Sources
- d. Radio
- e. Newspaper
- f. Other \_\_\_\_\_

11. Please provide a brief definition of the term, “organic” that you think is closest to the United States Department of Agriculture’s (USDA’s) definition.

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12. TRUE or FALSE: Hormones are allowed in raising hogs or poultry in the United States. (Please circle one.)

13. According to the USDA, in order for poultry to be labeled “free range” or “free roaming” the poultry must:
- a. be allowed access to the outside.
  - b. be allowed to fly freely about the property and have access to unlimited feed.
  - c. be allowed access to the outside and be fed organic or natural feed.
  - d. be required to live outside for at least 75% of their lives.

14. Please put any additional comments or questions about this survey here:

Thank you for completing this survey and please return this form to the teacher.